Memorandum

Date: **December 4, 2003**
To: **Staff Work Group on Urban Water Use Measurement**
From: **Eric Poncelet and Bennett Brooks (CONCUR, Inc.)**
Re: **Strawman Draft Implementation Approach**

Please find attached, for your review and comment, a copy of a Strawman Draft Implementation Approach for Appropriate Urban Water Use Measurement. It incorporates revisions proposed during the October 15, 2003 Urban Water Use Measurement Staff Work Group meeting as well as comments made during the November 12, 2003 Work Group teleconference (shown in underline / strike-through). It also incorporates recent changes proposed by technical support staff.

To narrow the scope of our deliberations at the December 5th Staff Work Group meeting, the focus of our discussions will be on the following elements of an implementation approach: main action, institutional vehicle, main actors, and rationale for the institutional vehicle recommended. Discussion on other elements of the implementation approach (e.g., funding, timeline, assurances, technical assistance, exemptions / exceptions, and adaptive management) will be deferred in large part until subsequent Staff Work Group meetings.

The intent of this draft is to elicit the Staff Work Group's preliminary feedback on the Authority's current thinking on this topic. It is the Authority's intention to solidify the broad outlines of the implementation approach by mid December and finalize a more detailed approach by late January 2004.

We look forward to discussing this material with you.

Appropriate Urban Water Use Measurement
Strawman Draft Implementation Approach

Contents

The outline for the Strawman Draft Implementation Approach for Appropriate Urban Water Use Measurement is as follows:

Introduction and Summary

Background

In response to longstanding stakeholder concerns over the need for more complete and accurate measurement of urban and agricultural water deliveries, the August 2000 CALFED Record of Decision called for the California Bay-Delta Authority 's (CBDA) Water Use Efficiency Program to put forward legislation requiring the appropriate measurement of all water uses in California.

To address the issue of urban water use measurement,[1] the Program adopted a two step process. The first step involved proposing a definition of appropriate measurement of urban water use. This effort was informed by deliberations of the Urban Water Use Measurement Staff Work Group. The second step now involves preparing the broad outlines of an implementation approach by which the actions called out in the definition would be realized. This step will also be informed by input from the Urban Water Use Measurement Staff Work Group. The draft implementation approach detailed below corresponds to the most recent version of the proposed definition.

Structure and contents

This document is divided into two main parts:

- ***Introduction and Summary*:** This part describes the background for the document, the process used to develop an implementation approach, and a brief overview of the draft implementation approach being proposed. It also includes a table summarizing the primary actions and implementation vehicles included in the draft proposed implementation approach.

- ***Strawman Implementation Approach – Detailed Overview.*** This part provides a detailed look at each of the proposed implementation actions. It summarizes for each one the status of current measurement efforts and puts forward the Authority's current thinking related to, among other things, sub-actions needed, primary actors, funding, timeline, assurances, and preferred implementation vehicle.

Process and Principles Used To Develop Implementation Approach

The development of an outline for a proposed implementation approach proceeded according to the following key steps:

- ***Derived key actions based on draft definition.*** Based on the current definition of appropriate urban water use measurement as discussed with the Urban Staff Work Group, staff and consultants derived a list of key actions needed to implement the definition. These actions segmented into the following categories: establishing standards and protocols for recording, reporting and disseminating data; identifying specific measurement needs; articulating reporting

[1] A parallel process has moved forward on the topic of appropriate agricultural water use measurement.

requirements; and stepping out essential research and adaptive management elements.

- ***Developed topic areas related to each possible action.*** To focus discussions, staff and consultants developed a series of questions necessary to consider in developing an implementation approach for each possible action. These questions – derived in part from the follow-on considerations listed in the draft definition – focused on topics such as: status of current actions and legislative and regulatory mandates; likely key players; funding and technical assistance needs; potential assurances; possible exemptions / exceptions; and likely adaptive management components. It also focused, importantly, on identifying the primary institutional vehicles required for implementation: legislative, administrative or budgetary.

- ***Identified overarching principles***. Before outlining an implementation approach, staff and consultants developed a preliminary list of overarching principles to guide their thinking on each possible action and provide sideboards for structuring a proposed approach. Key principles include:

    - use legislative remedies only when necessary;
    - streamline and rationalize state and federal reporting requirements;
    - acknowledge and account for smaller water suppliers' resource limitations;
    - seek parity – not symmetry – across agricultural and urban sectors;
    - stress incentives over penalties.

- ***Identified considerations for determining the need for legislative action.*** To guide thinking on the new institutional vehicles that would be needed to implement the actions called out in a definition of appropriate urban water use measurement, staff and consultants, in consultation with Staff Work Group members, established draft considerations for evaluating the need for legislative action. Key criteria include:

    - **Level of existing authority:** Absent a new / modified statutory provision, is the affected governmental agency empowered to take the desired actions?

        - Are the agencies empowered in a general way, empowered in a detailed way to take the specific action desired, or specifically required to do so?

    - **Interagency coordination required:** Is a governmental agency being asked to coordinate or facilitate actions of other actors without having been given any direct authority or incentive to induce others to cooperate and participate?

    - **Legal concerns:** Is a governmental agency being asked to do something very specific and technical, which it could mandate through a regulation, but which would be protected from legal challenge if embodied in legislation?

- **Prioritization needs**: Is a governmental agency in need of legislatively-imposed deadlines or mandates to facilitate prioritization of desired agency tasks among competing demands?

- **Potential for legislative success**: Is there widespread support for a legislative approach for the entire package?

  - Is the process of proposing legislation on a particular component likely to increase or decrease the chance of legislative success for the entire package?

- ***Drafted preliminary outline of implementation approach.*** Based on process outlined above, staff and consultants took a first step at outlining the overarching elements of an implementation approach. This outline – summarized briefly below and presented in greater detailed in the attached material – is intended to communicate the Authority's current thinking on this topic and foster Work Group discussions and feedback. The Authority expects that this outline will evolve based on Work Group deliberations and comment.

Summary – Implementation Approach

As noted above, the Authority has put forward the broad outlines of a possible implementation strategy for urban water use measurement. Key elements include:

- ***Establish state standards and protocols for recording, reporting and disseminating urban water use measurement data.*** This action, as outlined in the preliminary draft, envisions development of a statewide database to improve consistency across urban water purveyor measurement data and make the information more accessible to industry, government, researchers and the public. As currently proposed, it would be implemented primarily through administrative and budgetary actions. The Department of Water Resources (DWR) would serve as the lead agency, with the California Bay-Delta Authority providing oversight. The effort would require close collaboration with urban water purveyors.

- ***Require urban water purveyors to measure and report data on water sources and deliveries.*** This action, as outlined in the preliminary draft, relies on a mix of legislative, administrative, and budgetary steps for implementation. Most notably, the current outline envisions legislation requiring urban water purveyors to measure water use deliveries. Additional legislation may be necessary to address reporting requirements, though existing statutes may provide sufficient authority. Size thresholds would be included to minimize the impact on smaller water purveyors. The proposed approach relies on specific timelines but also anticipates incorporating deferrals to help address local cost-effectiveness constraints. Some state funding would likely be needed to support technical assistance.

- ***Require wastewater dischargers to measure and report data on urban water discharges.*** This action, as outlined in the preliminary draft, relies on current

EPA and SWRCB efforts and legislative mandates for implementation. No additional legislation is anticipated, though some administrative actions may be necessary to articulate guidelines for reading and maintaining meters.

- ***Require measurement and reporting of net groundwater usage.*** This action, as outlined in the preliminary draft, will require administrative authority as well as a budget allocation to enable the continuous regional characterization of groundwater usage. DWR would serve as the lead agency.

- ***Establish ongoing research and adaptive management efforts.*** This action, as outlined in the preliminary draft, calls for two parallel and complementary administrative actions intended to keep urban water use measurement current and effective: (1) establishment of an urban water-use research program; and, (2) establishment of an adaptive management program. As currently envisioned, these programs would be overseen by the Authority's Science Board, with CBDA implementing agencies taking the lead in implementation. The research program would be implemented in coordination with local universities and water purveyors. These initiatives would require state funding, though dollar amounts are not yet known.

~~The proposed implementation approach also includes steps to be taken by the state to address measurement of net groundwater usage.~~

A table summarizing the primary actions and implementation vehicles included in the draft proposed implementation approach follows.

-Draft Summary Table-

Draft Outline of Preliminary Implementation Approach for Urban Water Use Measurement

Measurement Action			Primary Actor	Proposed Primary New Implementation Vehicles Needed		
				Leg/Statutory Authority	Budgetary Authority	Admin Authority
Meas. Standards	I. A	Establish state standards / protocols (to record, report, disseminate water use data)	State (CBDA / DWR)		X	X
	I. B	Establish state standards / protocols (to record, report, disseminate wastewater discharge data)	State (SWRCB)	No new actions currently needed		
Measurement Needs	II. A	Measure water sources	Local			
			State (DWR)		X[6]	X
	II. B	Measure water use deliveries	Local			
			State (DWR)	X	X[6]	
	II. C	Measure wastewater discharge	Local	No new actions currently needed		
			State (SWRCB)			
	II. D.1	Net groundwater usage	State (DWR)		X	X
	II. D.2	Groundwater substitution transfers	State (DWR)	No new actions currently needed		
	II. D.3	Extraction in adjudicated basins	Watermasters	No new actions currently needed		
Reporting Needs	III. A	Report water sources	Local[1]			
			State (DWR)[2]	X[3]		
	III. B	Report deliveries	Local[1]			
			State (DWR)[2]	X[3]		
	III. C	Report wastewater discharge	Local[1]	No new actions currently needed		
			State (SWRCB)[2]			
	III. D.1	Report net groundwater usage	State (DWR)[2]		X	X
	III. D.2	Report groundwater substitution transfers	Local[1]	No new actions currently needed		
			State (SWRCB)[2]			
	III. D.3	Report groundwater use as required in adjudicated / managed basins	Watermasters[4]	No new actions currently needed		
Additional Needs	IV. A	Undertake urban water use research program	State[5] · CBDA Science Board · BD Implementing Agencies		X	X
	IV. B	Undertake adaptive management program	State · CBDA Science Board · BD Implementing Agencies		X	X

[1] Involves recording and reporting.
[2] Involves collecting, storing, and disseminating information.
[3] This may only affect the frequency and / or temporal specificity (i.e., to capture seasonal variation) of reporting.
[4] Watermasters to record and report data in accordance with the provisions of the adjudications in the basins to which they are assigned. Note: DWR serves as the watermaster in some cases.
[5] The state will enable a grant program that will facilitate local action by universities and urban water purveyors.
[6] State funding may be appropriate to facilitate more rapid adoption in cases where not locally cost-effective.

Strawman Draft Implementation Approach

I.A. State standards/protocols for recording, reporting, quality assuring, and disseminating urban water use data

Main Action:
State and federal agencies — in close coordination with local water suppliers and others — shall develop standards / protocols for taking, recording, and reporting to the State measurements of water used by urban water purveyors. The State shall also develop protocols for handling data that state is responsible for collecting. Other required measurements would be made part of this system as appropriate. (See parallel description of action for agricultural sector.) State and federal agencies shall develop system for receiving, storing, managing, quality-checking, compiling, summarizing, disseminating, and providing access to urban water measurement data for urban water purveyors and other required measurements as appropriate. Development of these standards / protocols and data systems is to focus initially on developing a universal set of data fields and standard definitions based on current practice.

Institutional vehicles:
Administrative action by CBDA with DWR anticipated to be lead implementer. Related budgetary support through Legislature. Additional legislation supplementing existing authority of lead actors is also possible.

Actors:
- Lead / responsible actor: CBDA and DWR with others
- Key implementation partners: urban water purveyors, USBR, DHS, CUWCC, CPUC, Researchers, environmental groups

Rationale:
CBDA is appropriate to convene multiple agencies to develop and carry out this action due to CBDA's composition and existing coordination role. DWR is appropriate as lead implementer for actions relating to development of state-wide measurement data standards and protocols due to DWR's role in marshalling statewide water-related data in the preparation of Bulletin 160 and DWR's statutory authority to collect records of diversion and use of water.

I.B. State standards/protocols for recording/reporting urban wastewater discharge

Main Action:
As standards / protocols for maintaining equipment and recording and reporting urban *wastewater discharge already exist*, develop electronic system for reporting wastewater discharge data to the state. Develop system capabilities for disseminating data to governmental agencies, water purveyors, research institutions, and the public. The SWRCB reporting system would operate independently but in parallel to any system developed for urban water use data (see I.A. above).

Institutional vehicles:
- Legislation: none.
- Administrative: SWRCB will issue regulations / guidelines for electronic reporting through the new reporting system.
- Budget requirement: minimal additional expected to cover WDR reporting, as the EPA funding only covers NPDES reporting.

Actors:
- Lead / responsible actor: SWRCB
- Key implementation partners: urban wastewater dischargers, DHS, CUWCC, CPUC, Researchers, environmental groups

Rationale:
EPA is already funding the SWRCB to develop an electronic reporting system for California NPDES wastewater dischargers that largely accomplishes the above action.

II.A. Measurement of urban water purveyor water sources/production

Main action:
Urban water purveyors to install suitable water source meters, read and maintain accuracy of the meters, and record and store data per standards / protocols

Institutional vehicles:
- Legislation: No new legislation needed. Draw upon existing legislation—i.e., Water Code section 520 (measure when possible) and general DWR water management authority.
- Administrative: This action would be a CBDA directive. State agencies would also establish guidelines for reading / maintaining source meters.
- Budget requirement: This could represent a significant local cost. Where not locally cost effective, State funding may be appropriate to facilitate more rapid adoption through incentives or assistance.

Actors:
- Lead / responsible actor: Urban water purveyors
- Key implementation partners: DWR, County Sealers of Weights and Measures, Water Measurement Industry

Rationale:
DWR is appropriate focal point for administrative action because DWR (along with SWRCB) has general authority to take all actions necessary to prevent waste and unreasonable use of water, together with other authorities. Regulation may be necessary to extend requirement to remaining purveyors, and to craft appropriate exceptions / exemptions. Agencies can take administrative action relating to reading and maintaining source meters to help ensure high data quality.

II.B.Measurement of urban water purveyor customer water deliveries

Main action:
Urban water purveyors to install suitable customer service meters, read and maintain accuracy of the meters, and record and store data per standards / protocols

Institutional vehicles:
- Legislation: Will be needed. Legislation will affect only pre-1992 and non-CVP cases.
- Administrative: Guidelines would be established for reading / maintaining source meters.
- Budget requirement: This could represent a significant local cost. Where not locally cost effective, State funding may be appropriate to facilitate more rapid adoption through incentives or assistance.

Actors:
- Lead / responsible actor: Urban water purveyors
- Key implementation partners: DWR, County Sealers of Weights and Measures, Water Measurement Industry, DWR

Rationale:
- Legislation needed, as administrative actions to strengthen required compliance, consistency, and quality assurance / quality control of data reported represent significant departure from current practice. Such legislation is consistent with past service meter policy. Any legislation would have to be reconciled with existing metering mandates and agreements.

II.C. Measurement of urban wastewater discharge

Main action:
Wastewater dischargers to install suitable effluent measuring devices, read and maintain accuracy of effluent measuring devices, and record and store data per existing standards / protocols and the new electronic reporting system. Develop system capabilities for disseminating data to governmental agencies, water purveyors, research institutions, and the public.

Institutional vehicles:
No new actions currently needed.

Actors:
- Lead / responsible actor: Urban wastewater dischargers
- Key implementation partners: SWRCB, Water Measurement Industry

Rationale:
Implementation of current statutes (Clean Water Act and Porter-Cologne Water Quality Control Act) already requires measurement of discharges. (Further detailed in definition.)

II.D.1Measurement of urban net groundwater usage

Main action:
State to employ more precise methods to compute net usage of groundwater. In particular, state to perform continuous regional characterization of groundwater net usage using two methods simultaneously: 1) development of detailed sub-basin hydrologic balances, and 2) the water table / specific yield method.

Institutional vehicles:
- Legislative: none.
- Administrative: DWR staffing
- Budget requirements: Funding of DWR

Actors:
- Lead / responsible actor: DWR
- Key implementation partners: CBDA

Rationale:
Computation of net usage of groundwater is already part of DWR's role in preparing Bulletin 160. This action represents a technical improvement in the approach taken in performing that function.

II.D.2Measurement of urban groundwater use; groundwater substitution permittees

Main action:
Groundwater substitution transfer permittees to continuously measure groundwater use in the wells directly involved in groundwater substitution transfers. Measurement to occur via instantaneous and totalizing flow metering. Measurement methods are to be consistent with state standards / protocols.

Institutional vehicles:
· No new actions currently needed regarding measurement.

Actors:
· Lead / responsible actor: DWR and Reclamation

Rationale:
Continuous measurement and monitoring of groundwater substitution transfers is required by DWR pursuant to nonregulatory technical guidance published by DWR, where DWR is a buyer or potentially injured downstream user or when state facilities are used to convey water. (Further detailed in definition.)

II.D.3Measurement of urban groundwater use in adjudicated and managed basins.

Main action:
Measurement of individual groundwater extraction as required in adjudicated and managed basins.

Institutional vehicles:
· Adjudication.

Actors:
· Lead / responsible actor: watermasters; users

Rationale:
Measurement of groundwater extraction in adjudicated and managed basins is currently required and governed by watermasters.

III.A. Reporting by urban water purveyor to State of California—water sources and production

Main action:
Water purveyors to report water sources annually to State of California.

Institutional vehicle:
- Legislative: not needed. Rely on existing statutory reporting requirements: e.g., UWMPA, Water Code Section 226, subsection C ("DWR 'may' collect records of diversion and use of water").
- Administrative: need regulation through the DWR dictating the information needed.
- Budget requirements: sustained funding for technical assistance.

Actors:
- Lead / responsible actor: Urban water purveyors
- Key implementation partners: DWR

Rationale:
Legislation may be advisable to bolster assurance of compliance with existing requirements or as part of defining a specific authority to impose detailed reporting requirements. This legislation may only affect the frequency of reporting and / or the temporal specificity of reporting (to capture seasonal variation).

Additional administrative action may be required to describe reporting requirements in appropriate detail to guide on-the-ground implementation.

III.B. Reporting by urban water purveyor to State of California; customer water uses

Main action:
Water purveyors to report deliveries annually to State of California.

Institutional vehicle:
- Legislative: not needed. Rely on existing statutory reporting requirements: e.g., UWMPA, Water Code Section 226, subsection C ("DWR 'may' collect records of diversion and use of water").
- Administrative: need regulation through the DWR dictating the information needed.
- Budget requirements: sustained funding for technical assistance.

Actors:
- Lead / responsible actor: Urban water purveyors
- Key implementation partners: DWR

Rationale:
Legislation may be advisable to bolster assurance of compliance with existing requirements or as part of defining a specific authority to impose detailed reporting requirements. This legislation may only affect the frequency of reporting and / or the temporal specificity of reporting (to capture seasonal variation).

Additional administrative action may be required to describe reporting requirements in appropriate detail to guide on-the-ground implementation.

III.C. Reporting by urban wastewater discharger to State of California

Main action:
Wastewater dischargers to report specified information annually to State of California

Institutional vehicles:
- Legislation: none.
- Administrative: SWRCB will issue regulations / guidelines for using the reporting system.
- Budget requirement: some additional funding for adding WDR dischargers to electronic reporting system.

Actors:
- Lead / responsible actor: Urban wastewater dischargers
- Key implementation partners: SWRCB

Rationale:
Implementation of current statutes (Clean Water Act and Porter-Cologne Water Quality Control Act) already requires measurement of discharges. (Further detailed in definition.)

III.D.1 Reporting of urban net groundwater usage

Main action:
In computing net usage of groundwater through continuous regional characterization of groundwater net usage, State to self-report using developed standards and protocols.

Institutional vehicles:
- Legislative: none.
- Administrative: DWR staffing
- Budget requirements: Funding of DWR

Actors:
- Lead / responsible actor: DWR
- Key implementation partners: CBDA

Rationale:
Computation of net usage of groundwater is already part of DWR's role in preparing Bulletin 160. This action represents a technical improvement in the approach taken in performing that function.

III.D.2 Reporting of urban groundwater use; groundwater substitution permittees

Main action:
Information obtained by DWR and Reclamation through measurement by groundwater substitution transfer permittees to be further self-reported by DWR and Reclamation to State consistent with state standards and protocols for reporting.

Institutional vehicles:
· No new actions currently needed regarding measurement.

Actors:
· Lead / responsible actor: DWR and Reclamation

Rationale:
Continuous measurement and monitoring of groundwater substitution transfers is required by DWR pursuant to nonregulatory technical guidance published by DWR, where DWR is a buyer or potentially injured downstream user or when state facilities are used to convey water. (Further detailed in definition.)

III.D.3 Reporting of urban groundwater use in adjudicated and managed basins

Main action:
Measurement of individual groundwater extraction as required in adjudicated and managed basins.

Institutional vehicles:
· No new action currently needed.

Actors:
· Lead / responsible actor: Watermasters; users

Rationale:
Measurement of groundwater extraction in adjudicated and managed basins is currently required and governed by watermasters.

IV.A. Urban water use research program

Main action:
State agencies to work with water purveyors, and research institutes / universities to develop and sustain an urban water research program. Urban water research program to make available the resulting data / information to water purveyors, state agencies, research institutes / universities, and the public. State to establish a priority list for research items, develop a budget and timeline for accomplishing those research tasks identified as having the highest priority, and administer a research grant program to facilitate state, local and university entities to carry out those research activities. Included in the list as having the highest priority is metering of irrigated landscape water use.

Institutional vehicles:
- Legislation: none required.
- Administrative: An administrative initiative will require reporting back to the legislature on the research results per funding invested.
- Budget requirements: budget funding will be required.

Actors:
- Lead / responsible actors:
  - California Bay-Delta Authority Science Board to develop and carry out prioritization and review of urban water use research program.
  - DWR to take lead on ag / urban issues
  - SWRCB to take lead on recycling issues
- Key implementation partners: water purveyors, USBR, CPUC, DHS, CUWCC, Researchers, urban end users, public interest / environmental groups

Rationale:
CBDA and implementing agencies well suited to facilitate agenda-setting function for research program through grant-making function and to prioritize appropriate improvements in measurement as of ongoing importance to the state. Administrative action is appropriate because research and adaptive management functions are well recognized as within the purview of agencies involved.

IV.B. Adaptive Management Program

Main action:
State agencies to identify and pursue adaptive management needs for measurement as appropriate over time. In general, a framework for adaptive management can be thought of as a cycle consisting of six steps:

1. *Problem assessment*, including identification of objectives, proposed actions, hypotheses about relationships and forecasts about outcomes based on those hypotheses, and identification of knowledge gaps;
2. *Design* of a plan and monitoring program that will provide reliable feedback about the effectiveness of the chosen actions;
3. *Implementation* of the plan and program;
4. *Monitoring* of indicators to determine action effectiveness and to test the hypotheses that formed the basis for the forecasts;
5. *Evaluation* of actual outcomes compared with forecast outcomes; and
6. *Adjustment* of objectives, actions, and hypotheses to reflect new understanding, leading to a renewed cycle commencing again with problem assessment.

Likely topics for evaluation include (note that this is not intended to be a comprehensive list):
- Efficacy and accuracy of new system for recording / reporting / disseminating data
- Quality and completeness of urban source, delivery, and discharge water data being reported
- Degree to which water quality information is being effectively measured and reported.
- Degree of overdraft of groundwater basins and the need to require additional measurement of individual groundwater extraction in basins at risk.
- Harmonization of existing databases and databases under development (e.g., wastewater discharge).
- Effectiveness of research coordination program and cost-effectiveness of research findings

Institutional vehicles:
- Legislation: none required.
- Administrative: none.
- Budget requirements: To be included as part of the CBDA Science Program and / or State Water Plan processes.

Actors:
- Lead / responsible actors: CBDA Science Board
- Key implementation partners: DWR and all persons / entities whom DWR must consult in preparation of State Water Plan.

Rationale:
CBDA and implementing agencies well suited to facilitate agenda-setting function for research program through grant-making function and to prioritize appropriate improvements in measurement as of ongoing importance to the state. Administrative action is appropriate because research and adaptive management functions are well recognized as within the purview of agencies involved.